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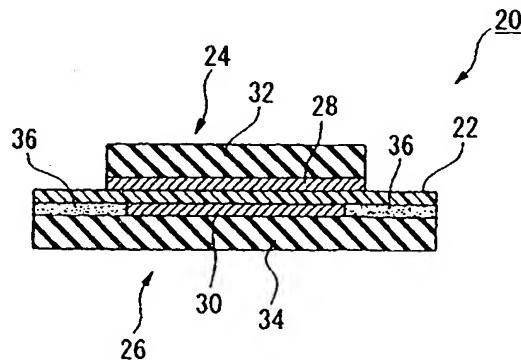
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(54) **Membrane electrode assembly and fuel cell**

(57) In order to provide a membrane electrode assembly and a fuel cell in which the thickness of the solid polymer electrolyte membrane is thin by enhancing self-protection of the solid polymer electrolyte membrane, a membrane electrode assembly (20) comprises a solid polymer electrolyte membrane (22) and a pair of gas diffusion electrode layer (24 and 26) having catalyst layers (28 and 30) and gas diffusion layers (24 and 26). The

catalyst layers of the gas diffusion electrode layer sandwich the solid polymer electrolyte membrane, one surface of the solid polymer electrolyte membrane is covered by the gas diffusion electrode layer (26) and the other surface of the solid polymer electrolyte membrane extends over the gas diffusion electrode layer (24), and ends of the catalyst layer of one gas diffusion electrode layer are disposed to be offset to ends of the catalyst layer of the other gas diffusion electrode layer.

**FIG. 1**



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## EUROPEAN SEARCH REPORT

Application Number  
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,X	US 5 464 700 A (STECK ALFRED E ET AL) 7 November 1995 (1995-11-07) * column 1, lines 53-58 * * column 3, lines 13-26 * * column 6, lines 12-62 * * figures 5-8 *	1-7	H01M8/10
P,X	EP 1 152 477 A (HONDA MOTOR CO LTD) 7 November 2001 (2001-11-07) * paragraph '0007' * * claims 1-16 * * figures 2,7-14,18,19 *	1-6	
A	DE 198 15 796 A (KERNFORSCHUNGSANLAGE JUELICH) 14 October 1999 (1999-10-14) * column 2, line 68 - column 3, line 62 * * figure 1 *	1-7	
D,A	US 5 176 966 A (EPP DANNY G ET AL) 5 January 1993 (1993-01-05) * the whole document *	1-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			H01M
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		26 January 2005	Knoflachner, A
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 01 9295

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26-01-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5464700 A	07-11-1995	AU 664703 B2	30-11-1995
		AU 1886692 A	08-01-1993
		CA 2102695 A1	05-12-1992
		WO 9222096 A2	10-12-1992
		DE 69204834 D1	19-10-1995
		DE 69204834 T2	04-04-1996
		EP 0586461 A1	16-03-1994
		JP 7501417 T	09-02-1995
		JP 3245161 B2	07-01-2002
EP 1152477 A	07-11-2001	JP 2002025587 A	25-01-2002
		CA 2345566 A1	02-11-2001
		EP 1152477 A2	07-11-2001
		US 2001051294 A1	13-12-2001
DE 19815796 A	14-10-1999	DE 19815796 A1	14-10-1999
		AT 230164 T	15-01-2003
		AU 4132999 A	01-11-1999
		CA 2327310 A1	21-10-1999
		WO 9953558 A1	21-10-1999
		DE 59903834 D1	30-01-2003
		EP 1070362 A1	24-01-2001
		US 6528197 B1	04-03-2003
US 5176966 A	05-01-1993	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82